

AMENDMENT

IN THE CLAIMS:

9, 1. (CURRENTLY AMENDED) A method for surface hardening a steel coil spring of a suspension system comprising the steps of:

nitriding a surface of said ~~steel~~ coil spring; and

regulating a nitriding potential in a nitriding atmosphere to control the step of nitriding said coil spring, ~~and said nitriding potential being is~~ the tendency of nitrogen to be absorbed by said steel coil spring.

2. (ORIGINAL) The method as recited in claim 1 wherein the step of regulating said nitriding potential further includes monitoring at least one process parameter.

3. (CURRENTLY AMENDED) The method as recited in claim 1 wherein the step of nitriding said coil spring further includes ~~the step of~~ introducing ammonia into said nitriding atmosphere.

4. (ORIGINAL) The method as recited in claim 1 further comprising the steps of:
cleaning said surface of said coil spring;
heating said coil spring; and
cooling said coil spring.

5. (ORIGINAL) The method as recited in claim 4 wherein the step of heating said coil spring includes heating said nitriding atmosphere to a temperature between 380°C and 480°C.

6. (CURRENTLY AMENDED) The method as recited in claim 1 wherein the step of nitriding said coil spring produces a diffusion zone having a ~~depth thickness~~ between 30 μm and 100 μm .

7. (CURRENTLY AMENDED) The method as recited in claim 1 wherein the step of nitriding said coil spring further includes forming a compound layer on said surface of said coil spring having a ~~depth thickness~~ between 0 and 2 μm .
8. (ORIGINAL) The method as recited in claim 1 further comprising the step of shot peening said surface of said coil spring.
9. (CURRENTLY AMENDED) The method as recited in claim ~~9-8~~ wherein the ~~step of shot peening said surface of said coil spring includes first shot peening said surface of said coil spring surface of said coil spring is shot peened with a .8 mm diameter shot and then second shot peening said surface of said coil spring with a .3 mm diameter shot.~~
10. (CURRENTLY AMENDED) A method for surface hardening a steel coil spring of a suspension system comprising the steps of:
- cleaning said surface of said coil spring;
 - heating said coil spring;
 - nitriding a surface of said coil spring;
 - regulating a nitriding potential in a nitriding atmosphere to control the step of nitriding said coil spring, said nitriding potential being the tendency of nitrogen to be absorbed by said steel coil spring;
 - ~~controlling said step of regulating said nitriding potential with a computer;~~
 - cooling said coil spring; and
 - shot peening said surface of said coil spring.
11. (ORIGINAL) A steel coil spring of a suspension system comprising:
- a steel body portion having a surface; and
 - a diffusion zone produced by nitriding said surface of said coil spring by regulation of a nitriding potential.

12. (ORIGINAL) The coil spring as recited in claim 11 wherein said surface of said coil spring is nitrided by introducing ammonia into a nitriding atmosphere.
13. (ORIGINAL) The coil spring as recited in claim 11 wherein a nitriding atmosphere is heated to a temperature between 380°C and 480°C.
14. (CURRENTLY AMENDED) The coil spring as recited in claim 11 wherein said diffusion zone has a ~~depth~~ thickness between 30 μm and 100 μm .
15. (CURRENTLY AMENDED) The coil spring as recited in claim 11 wherein said coil spring further includes a compound layer having a ~~depth~~ thickness between 0 and 2 μm .
16. (NEW) The method as recited in claim 1 wherein the step of regulating said nitriding potential is controlled by a computer.
17. (NEW) The method as recited in claim 4 where in the step of cleaning said surface of said coil spring includes employing hydrochloric acid.
18. (NEW) The method as recited in claim 3 wherein the step of introducing ammonia into said nitriding atmosphere includes introducing said ammonia into said nitriding atmosphere for 3 to 8 hours.
19. (NEW) The method as recited in claim 1 wherein said steel coil spring includes aluminum.
20. (NEW) The method as recited in claim 10 where in the step of cleaning said surface of said coil spring includes employing hydrochloric acid.
21. (NEW) The method as recited in claim 10 wherein the step of nitriding said coil spring further includes the step of introducing ammonia into said nitriding atmosphere for 3 to 8 hours.

22. (NEW) The method as recited in claim 10 wherein said steel coil spring includes aluminum.

23. (NEW) The method as recited in claim 11 wherein said steel coil spring includes aluminum.

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